

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, DC 20554**

In the Matter of	)	
	)	
The Wireless Telecommunications Bureau and	)	
the Office of Engineering and Technology Seek	)	
Comment on Progeny's Joint M-LMS Field	)	WT Docket No. 11-49
Testing Reports	)	

To: Chief, Wireless Telecommunications Bureau and  
Chief, Office of Engineering and Technology

**SUR-REPLY OF  
PROGENY LMS, LLC**

Progeny LMS, LLC ("Progeny"), through its attorneys, hereby responds to those reply comments that were filed on January 11, 2012 by parties that had not previously submitted comments in this proceeding. Although captioned as reply comments, some of these filings present new arguments that Progeny has not had an opportunity to address.

The vast majority of the reply comments repeat incorrect claims and exaggerations that were first made by Progeny's opponents in earlier stages of this proceeding and were addressed by Progeny in its January 11, 2012 response.<sup>1</sup> For example, a letter signed by a number of parties claims that "[f]ield testing has proved conclusively that Progeny will disrupt a substantial number of unlicensed devices that consumers and businesses use every day."<sup>2</sup> The field tests in

---

<sup>1</sup> Response of Progeny LMS, LLC, WT Docket No. 11-49 (Jan. 11, 2013) ("*Progeny Response*").

<sup>2</sup> Letter from American Gas Association, et al. to The Honorable Julius Genachowski, Chairman, Federal Communications Commission, WT Docket No. 11-49, at 1 (Jan. 11, 2013) ("*Letter*"); *see also* Letter from Nick Petrakis, Chief Network Architect, Pacific Gas & Electric Company to The Honorable Julius Genachowski, Chairman, Federal Communications Commission, WT Docket No. 11-49, at 1 (Jan. 11, 2013) ("*PG&E Letter*") (using identical language).

fact showed that no unlicensed device suffered a disruption in communications capabilities, even in break case conditions.

The letter also claims that “[t]he operations of millions of unlicensed devices – all manufactured, purchased, installed, and used in reliance of the FCC’s existing rules before Progeny received the waiver – will be placed at risk.”<sup>3</sup> Of course, the Commission’s existing rules for M-LMS networks authorize (and arguably require) exponentially more interference to Part 15 devices, including the use of high power return paths from mobile M-LMS units, so any Part 15 devices that were manufactured in reliance on the existing rules will have no difficulty operating successfully in the presence of Progeny’s M-LMS network.

Ignoring this fact, this same letter incorrectly asserts that “Progeny has done nothing to protect users of unlicensed devices, and repeatedly has requested rule concessions.”<sup>4</sup> The Commission, however, has already concluded otherwise, noting that Progeny’s M-LMS network design “takes the goal of minimizing interference to other users into account.”<sup>5</sup>

Other new parties make similar misstatements. The Edison Electric Institute claims that Progeny’s M-LMS network “will substantially degrade the operational performance of millions of smart grid devices.”<sup>6</sup> The joint tests, however, demonstrate that any degradation to smart grid devices would be minimal, particularly as compared to the significant interference that such

---

<sup>3</sup> *Letter* at 1; *PG&E Letter* at 1.

<sup>4</sup> *Letter* at 2; *PG&E Letter* at 2.

<sup>5</sup> *Request by Progeny LMS, LLC for Waiver of Certain Multilateration Location and Monitoring Service Rules*, Order, DA 11-2036, ¶ 26 (Dec. 20, 2011) (granting conditional waivers of Sections 90.155(e) and 90.353(g) of the Commission’s rules).

<sup>6</sup> Reply Comments of the Edison Electric Institute, WT Docket No. 11-49, at 4 (Jan. 11, 2013). Edison Electric cites the comments of the Utilities Telecom Council for this proposition.

networks already experience from other Part 15 users of the 902-928 MHz band. Further any degradation attributable to Progeny's position location network can be fully corrected by smart grid devices using the same interference mitigation techniques that such devices employ to address interference from other sources. Edison Electric further claims that the joint tests demonstrate that Progeny's network "will render smart meters and other Part 15 devices within close proximity of Progeny's high power beacon transmitters unusable."<sup>7</sup> In fact, all the Part 15 devices that were tested continued to function as intended in break case conditions immediately adjacent to Progeny's M-LMS beacons and no evidence was detected of receiver overload to Part 15 devices or other disruptive conditions.

A few parties, however, raised new arguments that warrant consideration herein. Most of the new arguments focus on the inherent difficulties of operating in a shared spectrum band without explaining why the operation of Progeny's primary licensed service would have any more impact on the band than the ubiquitously deployed Part 15 devices that already exist. Several of the commenting parties highlight the authorized transmit power for M-LMS networks.<sup>8</sup> Differences in power levels are largely irrelevant, however, if the higher power transmitters are placed on tall structures a significant difference from most Part 15 devices, while competing Part 15 devices are routinely used within a few feet or yards from each other.

For example, the Alarm Industry Communications Committee indicates that some of their members are concerned that Progeny's service will "pose an interference threat" or "could

---

<sup>7</sup> *Id.* at 4. Edison Electric cites the comments of GE Digital Energy to support its claim regarding the potential for receiver overload.

<sup>8</sup> *See, e.g., Id.; Letter* at 1; *PG&E Letter* at 1.

negatively impact” alarm devices operating in the 902-928 MHz band.<sup>9</sup> The Committee indicates that such negative impacts might include missed signals, significantly reduced range, and reductions in battery life.<sup>10</sup> The Committee, however, provides no technical information about the operations of such devices, including whether they operate in the specific frequencies used by Progeny’s service (most Part 15 devices do not) and whether they are frequency hopping or spread spectrum devices similar to those that were shown in numerous field tests to be fully capable of operating successfully in the presence of Progeny’s position location service without any loss in effective operating range. In fact, Progeny has tested its M-LMS network with a wide range of Part 15 technology types and has not identified any such devices that were unable to operate as intended in the presence of its position location service.

Another party, Exelon Corporation, concludes in its reply comments that the joint test reports demonstrate that the degradation to smart grid devices that is attributable to Progeny’s network “is as much as 7.4% (measured as “packet loss”).”<sup>11</sup> Exelon claims that it expects and achieves a 98 percent level of reliability for its Distribution Automation (“DA”) equipment, apparently including those elements of its DA equipment that use unlicensed Part 15 devices.<sup>12</sup> Exelon further claims that if its requirement of 98 percent reliability is not maintained, its electric services potentially could be interrupted to hundreds or thousands of customers.<sup>13</sup>

---

<sup>9</sup> Reply Comments of the Alarm Industry Communications Committee, WT Docket No. 11-49, at 1-2 (Jan. 11, 2013).

<sup>10</sup> *Id.* at 2.

<sup>11</sup> Reply Comments of Exelon Corporation, WT Docket No. 11-49, at 6 (Jan. 11, 2013) (“*Exelon Reply Comments*”).

<sup>12</sup> *Id.*

<sup>13</sup> *Id.* at 6-7.

Progeny questions the terminology that Exelon is employing in asserting that it expects and receives 98 percent reliability. Exelon claims that “[f]or energy delivery companies, ‘packet loss’ means Smart Grid data is not being transmitted and received successfully, triggering the re-transmission of data.”<sup>14</sup> Thus, Exelon is apparently asserting that its 98 percent requirement applies to the first attempted transmission of data by an unlicensed device, and not any of the subsequent retransmissions that many smart grid devices are designed to do automatically or based on a prompt from the receiving device.

Based on the results of the joint tests, Progeny believes that, in order to achieve such high reliability (with Progeny’s network turned off), the Part 15 transmitters and receivers used by Exelon would have to be placed relatively close together even in low noise environments. In contrast, the joint tests with Itron and Landis+Gyr were conducted in relatively noisy environments with the Part 15 devices under test routinely placed near the edge of their effective operating range (with Progeny’s network turned off). In these relatively challenging conditions, the automated meter reader (“AMR”) devices that were tested often evidenced high levels of data throughput loss with Progeny’s network turned off, often failing by a very wide margin the throughput success rates that Exelon claims it requires.

Of course, if Exelon has configured its networks in such a robust manner that its equipment routinely operates with less than two percent throughput loss due to existing noise in the 902-928 MHz band, the anticipated throughput loss that might be attributable to Progeny’s network (if there is any throughput loss attributable to Progeny’s network) can be expected to be far lower than the 7.4 percent reduction that was documented in the relatively challenging conditions that were employed in the joint tests.

---

<sup>14</sup> *Id.*

In any event, Progeny suspects that, despite Exelon's claims to the contrary, its ability to maintain a reliability level at or near 98 percent is due in large part to the capabilities of its smart grid devices to automatically retransmit lost data packets. Exelon claims that its AMR equipment includes more than one million Part 15 radio based meters that use "one-way" communications "which do not provide any retries."<sup>15</sup> In Progeny's experience, however, such one-way meter reading devices do retransmit the same data at regular intervals, but they do this automatically, not as a result of a prompt from the Part 15 receiver. This is consistent with Itron's observation in its comments that some one-way AMR equipment ensures reliable throughput by "simply transmitting at certain intervals to obtain messages."<sup>16</sup> Thus, even one-way smart grid devices employ interference mitigation techniques that permit them to operate successfully in the noisy 902-928 MHz band as it exists today, and will also permit them to operate successfully in the presence of Progeny's M-LMS network.

Exelon describes another end user AMR device that it employs that it claims may be relatively susceptible to interference from other sources in the 902-928 MHz band. Exelon indicates that the AMR transmitter is installed at a customer's premises for meter reading and, upon loss of power, the transmitter unit "uses stored energy to send a single 'last gasp' message" notifying the utility that the location is suffering an outage.<sup>17</sup> In using the term "stored energy," Progeny assumes that Exelon is referring to a battery or capacitor in the device. Progeny questions whether the stored energy in such a device would be sufficient to transmit a message

---

<sup>15</sup> *Id.* at 7 n.12.

<sup>16</sup> Comments of Itron Corporation, WT Docket No. 11-49, at 2 (Dec. 21, 2012).

<sup>17</sup> *Exelon Reply Comments* at 4.

only once, rather than the same message repeatedly until the stored energy is depleted. Even if the device is designed to send only a single transmission, this was likely deemed adequate by the manufacturer of the AMR device because power outages usually impact multiple customers and therefore if an outage alert from one or a few meters is not received by the utility network (such as due to interference from other Part 15 devices), the outage alerts from numerous other meters (randomly operating in different time and spectrum slots) will still be received by the utility network. This is the spectrum sharing situation that exists today in the 902-928 MHz band and, as Progeny has demonstrated, it will not be altered by the operation of Progeny's position location service.

Exelon finally argues that Progeny's testing of AMR devices was inadequate because Progeny did not test its network in the presence of a dense environment of AMR transmitters and receivers and thus the effects on such dense AMR deployments are not known.<sup>18</sup> When Progeny was working with Itron and Landis+Gyr to develop their joint test plan, this issue was discussed repeatedly. Progeny even offered to test an M-LMS network that it constructed in Kansas City in the presence of a dense deployment of AMR devices that Landis+Gyr operates at that location. Instead, the parties concluded that the potential effects of Progeny's service on dense networks of AMR devices could be extrapolated sufficiently based the results of joint testing with Itron and Landis+Gyr in Santa Clara County.

Further, as Progeny explained in its response, the use of relatively worse case test conditions in the joint tests ensured that any throughput losses experienced by dense deployments of AMR devices would be significantly less than the losses identified in the joint tests. As noted above, the AMR transmitters and receivers under test were routinely placed at

---

<sup>18</sup> *Id.* at 6.

the edge of their effective operating range (with Progeny's network off). Most AMR end user transmitters in a dense deployment, however, will be much closer to the AMR receiver (or multiple receivers) increasing the likelihood that the desired data will be transferred successfully on the initial attempt. Therefore, the results of the joint tests are fully adequate to conclude that Progeny's network will not cause unacceptable levels of interference to Part 15 devices, including dense deployments of Part 15 devices.

Finally, another new party, Dairyland Power Cooperative, claims that Progeny's signals will cause both "co-channel and adjacent channel interference" to unlicensed Part 15 devices.<sup>19</sup> The Cooperative is incorrect in both respects. Progeny's joint tests and its 2011 tests demonstrate that Part 15 devices will be able to operate successfully across the entire 902-928 MHz band in the presence of Progeny's service, including in the specific 4 MHz of spectrum used by Progeny's network. The tests also demonstrate that, due to the very tight roll off of Progeny's beacon signals, adjacent channel interference does not result from Progeny's service.

The Cooperative also misconstrues the spectrum sharing requirements for Part 15 devices in the 902-928 MHz band, acknowledging that "[w]e understand that when operating in this band that interference is expected. That is, interference that follows the current Part 15 rules."<sup>20</sup> In reality, of course, Part 15 devices are required to accept interference from all authorized users of the 902-928 MHz band, including other uses that are not governed by Part 15 of the Commission's rules. As a reminder of this fact, each Part 15 device is clearly labeled "in a conspicuous location on the device" (or is supposed to be so labeled) stating:

---

<sup>19</sup> Comments of Dairyland Power Cooperative, WT Docket No. 11-49, at 1 (Jan. 11, 2013).

<sup>20</sup> *Id.*



This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.<sup>21</sup>

Addressing these conditions, Green River Energy observes in its comments that “[w]hile utilities are already reluctant to use unlicensed spectrum for electrical grid operations, it is still used particularly in rural areas where interference is less likely.”<sup>22</sup> Aside from Green River, however, none of the other commenters in this proceeding acknowledged the spectrum sharing regime that has long existed in the 902-928 MHz band. M-LMS licensee, Warren Havens, took note of this, arguing:

It is lack of candor for Part 15 Interests to assert that they are entitled to interference (or “degradation”) protection from M-LMS operations that they are not entitled to as to other, non-coordinated Part 15 devices and systems (or possibly their own devices in their own systems). Rather, what the Part 15 Interest[s] appear to be suggesting, in unspoken group language, is that by their numbers and assertion of critical services, they can change the rules, and the relations the Commission set in Orders as to licensed M-LMS vs. Part 15.<sup>23</sup>

Progeny, however, will not engage herein in this debate. Progeny has already designed its M-LMS network to operate compatibly with Part 15 devices, regardless of their intended use. As Progeny has thoroughly demonstrated in multiple rounds of testing, Progeny’s position location service employs significant and extremely effective interference mitigation techniques that enable spectrum sharing with Part 15 devices in the same manner that Part 15 devices share spectrum with each other. These capabilities have been proven not just in multiple field tests but through Progeny’s operation of a fully deployed M-LMS network in the San Francisco Bay

---

<sup>21</sup> 47 C.F.R. § 15.19(a)(3).

<sup>22</sup> Comments of Green River Energy, WT Docket No. 11-49, at unnumbered page 3 (Jan. 11, 2013).

<sup>23</sup> Reply Comments of SkyTel, et al., WT Docket No. 11-49, at 2 (Jan. 11, 2013).

Area, portions of which have been in operation for nearly three years, and through Progeny's operation of initial M-LMS network in 38 other large cities. The Commission should therefore appropriately conclude that Progeny has demonstrated that its position location service does not cause unacceptable levels of interference to Part 15 devices and Progeny can initiate immediately the provision of position location services to support public safety and consumers.

Respectfully submitted,

**PROGENY LMS, LLC**

A handwritten signature in black ink, appearing to read 'Bruce A. Olcott', written over a horizontal line.

Bruce A. Olcott  
Preston N. Thomas  
Squire Sanders (US) LLP  
1200 Nineteenth Street, N.W.  
Washington, D.C. 20036  
(202) 626-6615

Its Attorneys

January 17, 2013